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of its plant population before it was too late. Three fragments of primeval forest are noted in the same part of the state. The population is much the same as that of the Colebrook forest, except that the one in Cornwall is dominated by *Pinus Strobus;* these pines are said to be the most magnificent still existing in the East. The pine is not the climax type, however, since the undergrowth is dominated by hemlock and several hardwoods.

In a third paper, NICHOLS details the successional relations of the upland vegetation of the state. One of the most characteristic rock types of Connecticut is the trap ridge, whose vegetational history is depicted from the pioneer crustose lichens through the herb, shrub, and tree stages. Early trees are *Juniperus virginiana* and *Quercus stellata*, following which *Carya glabra* and *Quercus Prinus* are likely to prevail. These form a somewhat open forest, which later develops into a closed forest, dominated by several species of oak and hickory. This or a more mesophytic forest represents the climax type. The trap ridges have very characteristic talus slopes, on which the vegetation passes rather rapidly to the mesophytic climax forest. Another interesting upland succession is that of the sand plains, on which one of the prominent early tree stages is dominated by *Pinus rigida*, which later is succeeded by oaks. In the state are many abandoned fields which are reverting to forest, an early stage being that dominated usually by *Betula populifolia*, *Juniperus virginiana*, and *J. communis depressa*. Note is made of the varying importance of certain trees in different portions of the state; *Pinus Strobus* is of special interest in this respect, being a common pioneer in some parts, almost a climax tree in other parts, and negligible in still other parts. The importance of the chestnut in many Connecticut woodlands is being greatly lessened, owing to the ravages of the chestnut bark fungus, *Endothia gyrosa parasitica*.—H. C. COWLES.

Inheritance of semi-sterility.—BELLING[5] has made a careful analysis of the inheritance of partial sterility in crosses of *Stizolobium deeringianum* Bort. (Florida velvet bean) with other species of the same genus, namely *S. niveum* (Roxburgh) Kuntze (Lyon bean), *S. hassjoo* Piper and Tracy (Yokohama bean), and *S. niveum* var. (China bean). The pollen from healthy flowers of all these forms was found to be nearly 100 per cent good. A few ovules of some pods only were found to have aborted, due, the author believes, to circumstances unfavorable for those particular pods. From a third to a half of the pods had no aborted ovules. The ovules in general had completely formed embryo sacs. Of the F_1 generation of the three crosses, approximately 50 per cent of the pollen grains were found to be shrunken and non-viable, the other 50 per cent being perfectly developed and viable. Similarly, approximately 50 per cent of the ovules of F_1 plants abort. Sections of young ovaries showed almost exactly one-half of the ovules with complete embryo sacs "nearly filling the nucellus," while the other ovules, "though full sized, had either quite aborted embryo sacs, the nucellus being a uniformly cellular mass, in which, however, the remains of the aborted megaspore could usually be distinguished, or had only a minute cavity to represent the embryo sac." The fact that somewhat less than half the seeds of ripe pods were found to have aborted is believed to be due to a selective elimination through dropping of young pods that chanced to have all or nearly all aborted ovules. In the F_2 generation about one-half of the plants had almost wholly normal pollen grains and in the other half approximately 50 per cent of their pollen grains aborted as in F_1. The F_2 plants with normal pollen also had few aborted ovules just as the parent species had, while those with semi-sterile pollen had about 50 per cent aborted ovules. The F_3 progenies of fertile F_2 plants were wholly fertile. The semi-sterile F_2 plants, like all F_1 plants, produced F_3 offspring a half of whose members were fertile and a half semi-sterile with regard to both pollen and ovules. Some of the fertile F_3 stocks were grown on a large scale and found to breed true to that characteristic in F_4 and F_5.

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[5] BELLING, JOHN, The mode of inheritance of semi-sterility in the offspring of certain hybrid plants. Zeitschr. Ind. Abs.- u. Vererbungs. **12**:303–342. 1914.

The author points out clearly that the form of sterility observed in *Stizolobium* hybrids manifests itself only in the haploid, never in the diploid generation. The F_2 ratio of 1:1 from selfed F_1 plants is not, therefore, a zygotic but rather a gametic ratio. It is interpreted accordingly as simple Mendelian segregation, exceptional only in that the segregation is here visible in the gametes themselves and not merely inferred from the appearance and behavior of the zygotes as in ordinary Mendelian cases. Since gametes are haploid (simplex for genetic factors), it is obvious that dominance and recessiveness, either complete or partial, cannot in any way be concerned in this problem. As a working hypothesis, the author assumes two genetic factors, *K* and *L*, one present in *S. deeringianum* and the other in each of the other species. It is assumed that the presence of one or the other of these factors is essential for the development of normal pollen grains and embryo sacs, but that in the presence of both factors, just as in the absence of both, no development results. The hypothesis accounts for all the facts observed. The author promises the further crucial test of crossing together different fertile lines from the progeny of semi-sterile plants, in which, if the hypothesis holds, half of the crosses should yield only fertile and half only semi-sterile offspring. It would be instructive also to cross together the three forms other than *S. deeringianum*, all of which should produce wholly fertile hybrids.

It remains only to be said that, as an alternative hypothesis, *K* and *L* might be regarded as inhibitors of complete gametic development when present singly, the one neutralizing the effect of the other when both are together. *KL* and *kl* would then result in normal and *Kl* and *kL* in aborted gametes, just the reverse of the author's assumption. Both assumptions are equally in accord with the observed facts and the same further results are to be predicted from both. The author is to be congratulated upon the thoroughness of his analysis and the clearness of its presentation. The excellent illustrations accompanying the paper add not a little to its effectiveness.—R. A. EMERSON.

Calcicoles.—MALCOLM WILSON[6] has made a study of the varying composition of the woodlands of southeastern England, in connection with variations in the substratum. His conclusions are in harmony with those of most English ecologists, namely that the flora of the chalk and of other calcareous strata differs considerably from that overlying non-calcareous strata. However, the vegetation on the siliceous London clay differs considerably from that on the very similar "clay with flints," whereas the latter has a vegetation much like that of the chalk. Parallel species are found on the chalk and the clay with flints, the former being more xerophytic in structure; these results agree with those found long ago by KERNER. WILSON shows how other factors, such as depth of soil and amount of shade, are as likely to be limiting factors as is soil composition. These woodlands are largely coppiced every fourteen years or thereabouts, and WILSON pays large attention to the changes brought about at coppicing, through the admission of light, and to the gradual changes later on, as shade increasingly returns. While shade-tolerant species gradually get the upper hand in the years following coppicing, it is interesting to note that certain perennial species, usually regarded as light-requiring, may remain through the shade period; these plants are dwarf in habit and reproduce only vegetatively.

As is well known, most American ecologists place little emphasis on the division of plants into calcicoles, silicicoles, etc. BUTTERS,[7] however, records from the Selkirk Mountains of British Columbia some observations that harmonize well with the calcicole theory proposed by UNGER in 1836. One of the lateral moraines of the Sir Sandford glacier is composed chiefly of fragments of limestone and dolomite, whereas the other lateral moraine is composed chiefly of fragments of granite and mica schist. The flora of these two moraines is strikingly different, only 34 of the entire 110 species occurring on both moraines; only 21 species occur somewhat equally in the two habitats. The flora of the limestone moraine is composed of species that are largely rare or local in the Selkirks, and it is to be noted also that limestones are similarly infrequent in these mountains. All other limiting factors seem excluded except that of difference in chemical composition of the substratum. There are 34 species on these moraines, which were found in eastern North America by FERNALD;[8] 20 of these have exactly the same type of soil distribution in these widely separated regions, and in no case is there a reversal of soil preference.

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[6] WILSON, MALCOLM, Plant distribution in the woods of northeast Kent. I. Ann. Botany **25**:857–902. *figs. 4. pls. 3.* 1911.

[7] BUTTERS, F. K., Some peculiar cases of plant distribution in the Selkirk Mountains, British Columbia. Minn. Bot. Studies **3** and **4**:313–331. *fig. 1.* 1914.

[8] See BOT. GAZ. **45**:138–139. 1908.